

DRAWING AMENDMENTS

Replacement drawing sheets are filed herewith depicting prior art Figures 1, 2, 3A, and 3B with better quality than as previously filed.

REMARKS/ARGUMENTS

Applicants request the Office consider the following remarks upon its further review of the instant application. The invention of the present application is the novel and useful arrangement and control of devices that produce quantum effects for the specific purpose of forming programmable dopants that can be controlled in real time. In a particular embodiment, the invention can be realized as a fiber populated with quantum dots (whether particles or devices) attached to or adjacent to the fiber surface and with one or more control wires running through the interior of the fiber to control the doping properties of the quantum dots.

Claim Amendments

Claims 1 and 7 are amended to add the additional conjunction “or” as an alternative to the conjunction “and” to broaden the scope of the claims.

Claim 8 is amended to correct typographical errors.

Claim 15 is amended to delete the word “solid” to provide appropriate antecedent basis. Claim 15 is also amended to add the additional conjunction “or” as an alternative to the conjunction “and” to broaden the scope of the claim.

Claim 16 is amended to correct a typographical error and to address concern about indefiniteness.

Drawing Amendments

The Office action indicates corrected drawings are required in this application because of the poor quality of Figures 1, 2, 3A and 3B. New drawing sheets 1 and 2 are filed herewith with higher quality images of Figures 1, 2, 3A and 3B, suitable for publication.

Claim Rejections for Indefiniteness – 35 U.S.C. § 112

The Office action rejects Claims 1-17 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. The Office action quotes both the first and second paragraphs of 35 U.S.C. § 112, but immediately thereafter states that the rejection is based only on § 112, second paragraph. However, the discussion of the rejection in the Office action later seems to raise written description and enablement issues that are actually the purview of § 112, first paragraph, but does not in fact present a valid rejection on this basis.

The Office action initially states that claims 1-17 are indefinite because “there is no structure in the claim [sic] that would preclude the desired result(s) of claims 1-17.” (Emphasis added.) Applicant is confused by this statement. The structure recited in the claim is not intended to preclude anything. The claims in fact recite structure that is intended to achieve certain results (which may or may not be recited in the claims), for example, creating artificial atoms or programmable dopants.

The Office action next asserts that many terms in the claims are “statements of desired results in the claims, and are not supported by any structural limitations in the claims.” This assertion is untenable. In fact, most of the terms recited in the Office action in support of this proposition are clearly structural elements of the claims. “Control paths,” “energy,” “quantum dots,” “artificial atoms,” and “programmable dopants” are all structures, either components or resulting structures composed of components. The language surrounding these elements indicates the interaction, communication, and structural linkage between them. For example, claim 1 states that the “control paths” carry the “energy” along the material” and are connected to the “quantum dots.” The quantum dots are connected with the material. This is the essence of structural linkage between components. Functional interaction and results achieved in response to these structural relationships is also presented in claim 1, wherein artificial atoms are described as being formed in the quantum dots as a result of the application of the energy.

“A fundamental principle contained in 35 U.S.C. 112, second paragraph is that applicants are their own lexicographers. They can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art. Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. As noted by the court in *In re Swinehart*, 439 F.2d 210, 160 USPQ 226 (CCPA 1971), a claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought.” M.P.E.P. § 2173.01. “The [] focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available.” M.P.E.P. § 2173.02.

Applicants are allowed to use more general or generic terms to encompass multiple embodiments of the claimed invention. “If the claims, read in light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the statute (35 U.S.C. 112, Second paragraph) demands no more. *Shatterproof Glass Corp. v. Liberty Owens Ford Co.*, 758 F.2d 613, 225 USPQ 634 (Fed. Cir 1985).” M.P.E.P. § 2173.05(a). Applicants should not be forced to use narrower terms, for example, terms specific to a particular embodiment, unless the prior art necessitates a narrowing of the scope of the claim. See M.P.E.P. § 2173.04. Such is not the present circumstance as no rejections are presently founded under 35 U.S.C. §§ 102 or 103. For example, the term “control paths” is used to encompass many different forms of supplying energy to a quantum well or dot. The specification identifies many different forms for control paths including conduction metal wires, semiconductors, superconductors, carbon nanotubes, optical fibers, or any other means for carrying energy. (See ¶¶ 52, 53, and 65.) The control paths can further be in the form of antennae. (See ¶ 65.) The claim term “control paths” is therefore definite with respect to the scope that it is intended to convey. Additionally, the terms “quantum dot” and “artificial atom” are terms known in the art and the common definitions are set forth in the background section of the specification particularly in paragraphs 4-9. The term “programmable dopant” is specifically defined in paragraph 10 of the specification.

The Office action further states: “There is no reasonable description in the claims for how the device/method is composed, constructed, or functioned [sic]. A person having ordinary skill in the art would not be able to reconstruct the apparatus of claim 1 or the method of claim 7 as the claims are currently presented.” (Emphasis added.) This is a misstatement of the law and an invalid ground for rejection. The test for definiteness under 35 U.S.C. § 112, second paragraph is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification,” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576, 1 USPQ2d 1081, 1088 (Fed. Cir. 1986), not whether a person of ordinary skill in the art would be able to reconstruct the device or practice the method. The latter is the purpose and function of the written description and drawings of the specification. 35 U.S.C. § 112, first paragraph; M.P.E.P. §§ 2161, 2162, and 2163 et seq. The purpose of the claims pursuant to § 112, second paragraph, is to define the metes and bounds of the invention to apprise one of ordinary skill of the scope of the invention and to serve a notice function “by providing clear warning to others as

to what constitutes infringement of the patent.” M.P.E.P. § 2173.02. Applicants submit that the claims meet the requirement of identification of the scope of the invention to one of ordinary skill in the art. Withdrawal of the rejections to the claims pursuant to 35 U.S.C. § 112 is thereby requested.

To the extent the Office has concerns with the application meeting the written description or enablement requirements, Applicant offers the following observations. As indicated in Applicants’ response to the first Office action to a rejection under 35 U.S.C. § 112, first paragraph, the Office made that rejection without any explanation of who the Office would consider to be a person of ordinary skill and further presented no finding of fact as to why the present application would be unclear to such a person and thus not support the claims. (See M.P.E.P. §2163 generally and § 2163.04.) To the extent that the Office action intended to reassert such a rejection in the final Office action, the Office has still failed to meet its burden to provide a factual basis for the rejection.

Applicants remind the Office of the requirements for an adequate written description and enablement of the invention and for asserting rejections on these bases. First, with respect to the written description requirement, there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976). The examiner has the *initial burden*, after a thorough reading and evaluation of the content of the application, of presenting *by a preponderance of evidence* a rationale why a person skilled in the art would not recognize that the written description of the invention provides support for the claims.” M.P.E.P. § 2163(II) (emphasis added). To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon “reasonably conveys to the artisan that the inventor had *possession* at that time of the later claimed subject matter.” *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)) (emphasis added).

Second, with regard to the enablement requirement, in order to make a rejection, the examiner has the initial burden to establish a reasonable basis to question the enablement

provided for the claimed invention. *In re Wright*, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993). “A specification disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, unless there is a reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support. *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971)¹.” M.P.E.P. § 2163.04. “The examiner should *specifically identify* what information is missing and why one skilled in the art could not supply the information without undue experimentation.” MPEP § 2164.04 (emphasis added). “The examiner should **never** make the determination based on personal opinion. The determination should always be based on the weight of all the evidence.” M.P.E.P. § 2165 (emphasis in original).

Finally, the Office action states that the term “otherwise arranged” in claim 16 renders that claim indefinite. Applicants disagree. Breadth does not equate to indefiniteness. M.P.E.P. § 2173.04. “Arrange” means “to put into a proper order or into a correct or suitable sequence, relationship, or adjustment.” (Merriam-Webster’s Collegiate Dictionary, 1994.) The term “arrange” indicates a definite type of structure. Further, as indicated in the last phrase of the claim, the arrangement is limited to arrangements of fibers in “two- or three-dimensional structures.” For example, the term “arrange” when coupled with the description of “two- or three-dimensional structures” does not suggest a haphazard piling of fibers, which is a potential configuration for fibers in three dimensions. Applicants should not be required to list every conceivable arrangement of fibers in the claim. See *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986). Applicants therefore assert that claim 16, as amended, is definite and request withdrawal of the rejection.

Conclusion

For the reasons set forth above, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

¹ “It is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain *why* it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be no need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure.” 439 F.2d at 224, 169 USPQ at 370.

Respectfully submitted this 2nd day of March 2004.



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